

Ministry of Public Works, Egypt.—Physical Department

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REPORT ON THE WEATHER AND STATE OF THE RIVER FOR JANUARY, 1946

The Weather

Milder than usual, especially in the second half of the month. Scanty rainfall. Frequent morning mists.

At the beginning of the month mild southerly winds prevailed. Anticyclonic conditions with northeasterly winds followed, and during the first week thick morning mists were widespread, especially on the 2nd. On the 8th. a depression traversing the Mediterranean arrived north of Egypt and the weather became unsettled and showery for a few days, but the rainfall was nowhere heavy, the largest amount recorded being ten millimetres, at El Arish. During this period the nights were abnormally mild. A sharp fall in temperature took place on the 14th. when the temperature in Cairo did not rise above 16° C. (61° F) or 4° C. below the normal for the time of year. Light showers occurred near the coast.

During the third week the weather was settled, with winds chiefly from the northeast and temperatures slightly above average. Morning mists were frequent, being particularly wet and dense on the 17th., when fog prevailed in Cairo area almost until noon. Winds backed to north and northwest on the 20th., and for two days there were light showers of rain throughout Lower Egypt. Very high pressure over the Balkans, extending towards western Egypt, resulted in fresh northeasterly winds, at times of gale force. These conditions prevailed for several days. The wind attained a velocity of 70 kilometres an hour at Helwan on 23rd., 25th., and 26th., while 87 kilometres an hour was registered on the 27th; sandstorms occurred in many places on that day, with very light showers.

On the following day the advance of a shallow depression brought southerly winds and the weather became much warmer, the temperature in Cairo rising from normal on the 27th., to 7° C., above normal on the 28th., when 27° C. (81° F) was recorded. Northwesterly winds arrived on the afternoon of the next day and there was a pronounced fall in temperature; on the 30th., the maximum was only 18° C. (64° F) in Cairo, and showers occurred throughout Lower Egypt.

For the month as a whole the barometric pressure was everywhere much above normal, while the temperature was also above normal in all districts. Rainfall was considerably below normal, being only about a third of the average. The rainiest station was Alexandria, where rain fell on eleven days, but the total was only 18 millimetres, compared with a normal of 50 millimetres. Morning mists were more prevalent than usual, and sunshine at Giza averaged only 5.6 hours per day compared with a normal of 7.3 hours, while at Helwan the deficiency of sunshine averaged an hour a day for the whole month. There was less sunshine this month than in any January since 1932.

DEPARTURE FROM NORMAL FOR JANUARY 1946

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		(MAX + MIN)/2			
	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	m n.
I.—Mediterranean ...	1020.4	+2.2	19.0	+0.6	10.8	+1.5	14.9	+1.0	9	—27
II.—Lower Egypt ...	1020.6	+1.8	20.0	+0.2	8.2	+1.5	14.1	+0.8	4	—15
III.—Middle Egypt ...	1020.6	+1.4	20.2	+0.8	8.8	+1.1	14.5	+1.0	1	—3
IV.—Upper Egypt ...	1019.7	+0.1	22.9	+1.2	7.5	+0.7	15.2	+1.0	0	—1
V.—Western Desert...	1021.1	+0.8	21.3	+0.5	6.2	+1.4	13.8	+1.0	0	0
VI.—Red Sea ...	1018.7	+0.6	22.1	+0.4	12.2	+1.3	17.2	+0.8	0	—1

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State of the River

Lake Albert at Butiaba fell 12 centimetres during the month. Its level on February 1st, 1946, was 66 centimetres below the normal and 8 centimetres above the corresponding day of last year.

The Bahr el Jebel at Juba fell at normal rate during the whole month. Its level was on the whole 66 centimetres below the normal but almost identical with those of last year's throughout.

The River Sobat at Nasser fell much faster than normal rate. The levels were on the average 65 centimetres above the normal and 1.09 metres above those of last year throughout the month.

The White Nile at Malakal also fell faster than normal rate. The levels were on the average 30 centimetres above the normal and 85 centimetres above those of last year.

The Blue Nile at Roseires fell at almost normal rate during the month. The levels were in general above both the normal and those of last year's. At Khartoum the levels were nearly identical with the normal but 67 centimetres above those of last year's.

At Kajnarti, on the Main Nile, the river fell at almost normal rate. The levels were in general 10 centimetres below the normal but 1.16 metres above those of last year throughout the whole month.

The Difference of the mean levels in January 1946, from those of January 1945, and from the normal 1906-1935 were :—

STATION	DIFFERENCE OF MEAN LEVELS	
	JANUARY 1946 minus JANUARY 1945	JANUARY 1946 minus Normal
	Metre	Metre
Butiaba *	+ 0.08	— 0.66
Juba	+ 0.04	— 0.66
Nasser †	+ 1.09	+ 0.65
Malakal	+ 0.85	+ 0.30
Roseires	+ 0.62	+ 0.67
Khartoum	+ 0.67	— 0.05
Kajnarti	+ 1.16	— 0.10

* For February 1st, 1946.

† Nasser normal is for 1922-1935 only.

Y. M. SIMAIKA.

Director, Hydrological Service.

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR FEBRUARY, 1946

The Weather

Changeable with remarkably intense cold wave and rainy spell during a week commencing the 13th. Minor unsettled periods during the 1st and last weeks.

At the beginning of the month a deep depression was situated off Crete moving eastwards, and showers occurred on the coast on three days. 21 and 17 mms. were collected at Rosetta and Tolombat Bosili respectively during the 1st and 2nd.

On the 8th, Egypt was again under the influence of low pressure over Syria, with cool westerly winds which strengthened during the day, and there were light showers in the northern part of the Delta.

On the 11th, a deep depression appeared off Benghazi. Southerly winds prevailed, and the weather was exceptionally warm on the following day, the maximum temperature in Cairo reached 30°C. (86°F.) being 9°C. above normal; meanwhile there was a secondary depression crossing Upper Egypt. The cold fronts of both depressions traversed Egypt on the 13th, winds veered to west and north-west, and the weather became much cooler. The maximum temperature in Cairo did not exceed 20°C. on that day, compared with 30°C. on the previous day.

The depression persisted on the Eastern Mediterranean for some days, deepening considerably at times, and thus conditions throughout the Eastern Mediterranean became very disturbed, with westerly winds of gale force and rough seas. At Alexandria the wind velocity reached gale force on 3 successive days commencing the 15th, attaining a velocity of 73 K.P.H. on the 16th.

Also, at Helwan a gust of 72 K.P.H. was encountered with on the following day. Severe duststorms were widespread throughout Egypt on both days. At a height of 670 metres, the upper wind attained a velocity of 127 K.P.H. at Helwan on the 16th.

During this period the weather was very unsettled, rain was general in northern Egypt. The largest amounts of rainfall recorded were 10 mms. in Mariut on the 16th; 11, and 18 mms. in Rosetta on the 15th and 16th respectively; 12 mms. at Damanhur on the 16th. At many places on the coast rain fell daily for nearly a week, and at times it was associated with hail. No less than 37 mms. were registered at Borollos during the week commencing the 14th.

The weather was bitterly cold on the 16th and 17th. At Port Said and Helwan, the temperature did not rise above 13°C. (55°F.), being 7°C. below normal. Even in Upper Egypt, the maximum temperature departed from its normal by 8°C. at many stations.

With the rise of pressure on the 20th, the weather became generally mild and settled.

On the 22nd, the day temperature in Cairo rose to a maximum of 26°C. (79°F.) being 4°C. above normal. On the next day a depression made its appearance off Crete; travelling fast, it reached Syria next day. Milder weather prevailed. The passage of this depression was followed by strong westerly and north-westerly winds with rising dust and considerable fall in temperature; thus the maximum temperature which was in Cairo 27°C. (81°F.) did not exceed 17°C. (63°F.) on the 24th; being 6°C. below normal. Light rain occurred in northern Egypt.

Settled weather then prevailed until the end of the month.

For the month as a whole the mean atmospheric pressure was above normal everywhere, while the temperature was below normal in all districts except the Red Sea coast. The air was much drier than usual in both Alexandria and Helwan.

Rainfall was generally about the average.

DEPARTURE FROM NORMAL FOR FEBRUARY 1946

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		(MAX + MIN)/2			
	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I.—Mediterranean ...	1017.5	+0.7	18.4	—0.8	9.2	—0.6	13.8	—0.7	27	+ 2
II.—Lower Egypt ...	1018.2	+1.1	20.1	—0.6	7.0	—0.2	13.6	—0.4	19	+ 4
III.—Middle Egypt ...	1019.2	+1.7	20.7	—0.2	8.2	—0.2	14.4	—0.2	0	— 4
IV.—Upper Egypt ...	1019.8	+2.1	22.3	—1.6	7.0	—0.8	14.6	—1.2	2	+ 1
V.—Western Desert...	1020.6	+2.1	20.9	—2.2	6.2	0.0	13.6	—1.1	0	— 1
VI.—Red Sea ...	1017.9	+1.5	22.1	—0.3	12.0	+0.6	17.0	+0.2	0	— 1

H. HAMED MOHAMMAD.

Acting Director, Meteorological Service.

State of the River

Lake Albert at Butiaba fell 13 cms. during the month. Its level on March 1st, 1946, was 68 cms. below the normal and 11 cms. above the corresponding day of last year.

The Bahr el Jebel at Juba fell at normal rate during the whole month and the levels were much below the normal but almost identical with those of last year throughout.

The River Sobat at Nasser fell at almost normal rate. The levels were on the average 14 cms. above the normal and 13 cms. above those of last year's.

The White Nile at Malakal fell also at almost normal rate. The levels were in general 23 cms. below the normal but 7 cms. above those of last year's. At Gebel Aulia regulation for emptying the Reservoir started on the 20th, and the downstream levels rose sharply thereafter until the end of the month.

The Blue Nile at Roseires fell at almost normal rate. The levels were generally 51 cms. above the normal and 49 cms. above those of last year's. At Khartoum the river recorded the same features which prevailed downstream Gebel Aulia.

The Main Nile at Kajnarti fell faster than normal rate during the whole month. The levels were in general 33 cms. below the normal and 55 cms. above those of last year's.

The difference of the mean levels in February 1946 from those of February 1945 and from the normal 1906-1935 were :—

STATION	DIFFERENCE OF MEAN LEVELS	
	FEBRUARY 1946 minus FEBRUARY 1945	FEBRUARY 1946 minus Normal
	Metre	Metre
Butiaba *	+ 0.11	— 0.68
Juba	+ 0.07	— 0.67
Nasser †	+ 0.13	+ 0.14
Malakal	+ 0.07	— 0.23
Roseires	+ 0.49	+ 0.51
Khartoum	— 0.19	— 0.02
Kajnarti	+ 0.55	— 0.33

* For March 1st, 1946.

† Nasser normal is for 1922-1935 only.

Y. M. SIMAIKA.

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Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR MARCH, 1946

THE WEATHER

The Abnormal Phenomena and Severe Sandstorm Occured in Cairo on March 10, 1946

One of the severest sandstorms, which ever occurred in Cairo district during the 50 years since observations began, took place on March the 10th. 1946, and was accompanied by abnormal phenomena.

The storm began at dawn with violent winds from the southeast veering to south, where it remained until late during the day. Velocities up to 102 kilometres per hour were registered in Cairo, and up to 96 at Helwan.

During the height of the storm about noon clouds of sand traversed the city, and darkness ruled. The sun was invisible, and it became almost dark. The colour of the sky changed through yellow, orange and to deep red. This terrifying phenomenon lasted for about a quarter of an hour, after which visibility improved gradually, although the wind remained very strong. People were alarmed, the atmosphere was suffocating; and damage occurred to trees, buildings, and communications; several boats sank in the Nile; and fires were started in some villages. By the end of the day the wind moderated and veered to west and northwest, and temperature dropped considerably.

These clouds of sand apparently crossed the Mediterranean as the press reported a fall of "blood rain" in Beyrouth on the following day.

Similar phenomena were reported by the ancients. In the Cairo Scientific Journal of 1906, 1907 and 1909 the following was published:—

In 525 B.C. the Army of Cambyses en route to Siwa, is said to have been overwhelmed by a violent south wind, carrying with it heaps of sand which covered them over, and in this way they disappeared.

Also Al Gæberti wrote that in Ramadan 1105 (May 1694) violent dusty winds darkened the sky; it was so windy and dark that the people thought it was the end of the world. An ornament like a boat was blown down from the Toulun Mosque and many houses collapsed.

Cause of the storm

On the 9th of March 1946 a deep desert depression was rapidly advancing from the Western Desert towards Egypt with a speed not less than 50 kilometres per hour, and warm southerly winds of gale force sprang up during the night. On the following morning the depression was in the neighbourhood of the Delta, and severe sandstorms prevailed.

The cold front of this depression finally passed during the evening, and conditions improved when the sea air replaced these hot Khamsin winds which were mainly concentrated over the eastern part of the Delta, including Cairo and Helwan. Fortunately Alexandria and the western coast, together with Upper Egypt, escaped this sandstorm.

The phenomena might be described as the passage of a dense sand cloud. During the passage of the crest over Cairo the sky became very dark and also reddish, most probably owing to the absorption and scattering of light by the particles.

"Dr. Oliver published that on an occasion, nearly similar to this, an air-man who was up, reported that the dust cloud reached a height of 4 kms., and for a period of 2 hours a tree, a few yards from the house, was never visible for a moment. The coloured sands of the storm were driven by the wind until it reached Crete, where they discoloured the paint of warships in the harbour."

This storm, in some respects, was unlike any other experience in Cairo within the memory of people now living.

On previous occasions, although the wind was equally strong or even stronger, the density of the sand cloud was not nearly as great.

On this occasion, there were considerable electrical disturbances. Radio Communication was interrupted, and flashes and sparks were observed on aërials and on the insulated wires. It has been observed before, that sand and dust sometimes carry electrical charges, and, though it was not possible to make an experiment on this occasion, the phenomena mentioned are probably due to the electrification of the sand.

For the month as a whole, the weather was cooler and drier than usual. It was remarkably cold during the period "20th to 25th", inclusive.

At the beginning of the month Egypt was under the influence of a depression advancing from central Mediterranean. Winds became southerly and the weather mild. Another depression followed on the 4th. The wind went again round to the south and temperature rose considerably. Maximum temperature of 30° C (86° F) was recorded in Cairo, being 7° C above normal. The cold front passed on next morning, and temperature fell below its normal by 2° C. Cool weather prevailed for 3 days. Light rain took place on the coast on the 6th.

On the 9th depressions appeared off Benghazi and in the western desert. Very warm easterly and southeasterly winds prevailed. The temperature reached 32° C (90° F) in several localities, being 10° C above normal in Cairo district. On the early morning of the 10th, the minimum temperature recorded was 25° C (77° F) in Helwan, and 23° C (73° F) in Cairo; being the highest on record in March. During the passage of the depression winds of gale force and severe sandstorms took place (described above). By the 11th, the depression had passed to the east, and cool northwesterly winds prevailed throughout Egypt. Two days after, the depression, which was then situated over Cyprus, deepened, and strong northwesterly winds prevailed at times. A maximum gust of 73 kilometres per hour was registered at Helwan, while the weather was generally cool and showery. 22 mms. of rain were collected at Alexandria and 13 at Ismaïlia on the 13th, while 10 mms. were measured at Attaka near Suez, on the following day.

On the 16th, a deep depression was centred off Crete. Southerly winds gave rise to widespread minor duststorms.

By the 19th, the depression has reached the Syrian coast, where it remained for some days. Westerly winds prevailed, and the weather was cool and unsettled. Light showers occurred in a few localities. This severe abnormal cold spell persisted from the 20th. to the 25th., inclusive. Cold air from the Balkans arrived in Egypt and penetrated to the extreme south of the Sudan. In Cairo district and Helwan the thermometer did not rise above 20° C (68° F) for four successive days commencing the 21st.

Conditions improved on the 26th, when high pressure system have been established over Egypt.

On the 28th, another depression was situated off the coast, moving rapidly eastward. It gave rise to warm southerly winds. The cold front of this depression passed over the Delta on the following day, and the arrival of the northwest wind lowered again the temperature considerably. In Helwan the maximum temperature was 6° C or more below the normal during the last three days of the month.

The mean atmospheric pressure for the month was above normal in all districts, except the Mediterranean coast and Lower Egypt; while the temperature was below normal everywhere. The air was much drier than usual. The mean relative humidity at Alexandria was 57% compared with a normal of 65%, while in Cairo the humidity was 5% below the normal.

Rainfall was general in deficit.

DEPARTURE FROM NORMAL FOR MARCH 1946

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		(MAX + MIN)/2			
	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I.—Mediterranean ...	1015.7	—0.2	20.7	—0.1	11.3	—0.5	16.0	—0.3	8	— 3
II.—Lower Egypt ...	1016.1	—0.1	23.2	—0.4	8.8	—0.3	16.0	—0.4	6	— 1
III.—Middle Egypt ...	1016.8	+0.5	24.0	—0.2	10.4	—0.1	17.2	—0.2	1	— 3
IV.—Upper Egypt ...	1016.3	+0.6	27.2	—1.0	10.4	—0.5	18.8	—0.8	0	0
V.—Western Desert...	1017.5	+0.9	25.8	—1.2	8.9	—0.7	17.4	—1.0	0	0
VI.—Red Sea	1015.5	+1.0	24.0	—0.8	13.6	—0.4	18.8	—0.6	0	— 1

M. HAMED MOHAMMAD.

Acting Director, Meteorological Service.

State of the River

Lake Albert at Butiaba fell 15 cms. during the month. Its level on April 1, 1946, was 74 cms. below the normal and 9 cms. above the corresponding day of last year.

The Bahr el Jebel at Juba fell a few cms. during the month. The levels were much below the normal but almost identical with those of last year during the whole month.

The River Sobat at Nasser fell gradually until the end of the month. The levels were on the average 11 cms. below the normal but almost identical with those of last year throughout.

The White Nile at Malakal fell almost at normal rate, the levels in general were 34 cms. below the normal and 8 cms. below those of last year.

The Blue Nile at Roseires fell at normal rate, the levels were in general 36 cms. above the normal and 44 cms. above those of last year throughout. At Khartoum the river fell almost steadily during the month. The levels were in general 47 cms. above the normal and 9 cms. above those of last year throughout the month.

The main Nile at Kajnarti fell a few centimetres until the 6th, then rose sharply till the 18th, owing to the contribution from Gebel Aulia. The level then fell afterwards until the end of the month. The levels were on the average 29 cms. above the normal and 18 cms. below those of last year throughout.

The difference of the mean levels in March 1946 from these of March 1945 and from the normal 1906-1935 were:—

STATION	DIFFERENCE OF MEAN LEVELS	
	MARCH 1946 minus MARCH 1945	MARCH 1946 minus Normal
	Metre	Metre
Butiaba *	+ 0.09	— 0.74
Juba	+ 0.06	— 0.76
Nasser †	+ 0.04	— 0.11
Malakal	— 0.08	— 0.34
Roseires	+ 0.44	+ 0.36
Khartoum	+ 0.09	+ 0.47
Kajnarti	— 0.18	+ 0.29

* For April 1st, 1946.

† Nasser normal is for 1922-1935 only.

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Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR APRIL, 1946

THE WEATHER

Changeable.

- (1) Abnormally cool during the 1st and 2nd and during the period (19th to 22nd).
- (2) Warm during the last 3 days with thunderstorms on the 29th.

The cold weather which was experienced during the last week of March continued into April, and on the morning of the 2nd, the minimum thermometer recorded 7°C both in Cairo and Qena being 5° and 7°C respectively below the normal. These are the lowest figures on record for the month of April. Also in Assuit, and Luxor the previous April minimum temperatures were beaten on that night.

The weather was pleasantly cool by day. The thermometer did not rise above 22°C on two successive days in Giza. (5° below normal).

From the 1st to the 4th northeasterly winds were prevailing in Middle Egypt reaching at times gale force. A maximum gust of 74 K.P.H. was registered at Helwan on the 2nd. Dust was raised in many localities.

Settled conditions then prevailed until the middle of the month. On the 17th a depression was situated off Tobrok and warm southerly winds traversed Egypt. Temperature in Helwan rose to 34 °C. The depression passed on the following day. The northerly winds which traversed Egypt brought a sharp fall in temperature on the 19th, the maximum temperature in Cairo district being only 23 °C or 6 °C below normal. Light rain occurred in northern Egypt. This cool spell lasted until the 22nd.

On the following day a depression near Benghazi was advancing eastwards. Hot southerly winds prevailed through out Egypt on the 24th. The maximum temperature reached 37°C (7°C above normal) in Giza.

The passage of the depression on the next day induced a northerly current of cold air in Egypt and a very rapid fall of temperature resulted. Thus on the 25th the maximum temperature at Giza was only 26°C.

On the 29th a shallow depression made its appearance over the western desert. Winds in Egypt blew from south and southeast and the weather became very warm (In Cairo 37°C was reached). Local thunderstorms with light rain took place. During the storm the wind velocity reached 105 K.P.H. in Helwan.

By the following day the depression was traversing the Delta causing Khamsin conditions and widespread duststorms.

For the month as a whole the mean atmospheric pressure was above normal every where except Upper Egypt and the Red Sea coast, while the temperature was generally about normal. Rainfall was deficient.

DEPARTURE FROM NORMAL FOR APRIL 1946

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		(Max + Min)/2			
	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I.—Mediterranean ...	1014.9	+0.7	22.9	—0.3	15.0	+0.4	19.0	0.0	0	— 3
II.—Lower Egypt ...	1014.8	+0.1	27.4	—0.3	12.0	+0.2	19.7	0.0	0	— 3
III.—Middle Egypt ...	1014.6	+0.2	28.4	—0.2	13.5	+0.1	21.0	0.0	0	— 2
IV.—Upper Egypt ...	1013.1	—0.3	33.0	0.0	14.8	—0.4	23.9	—0.2	0	0
V.—Western Desert...	1014.6	+0.2	32.1	—0.1	14.3	+0.4	23.2	+0.2	0	0
VI.—Red Sea ...	1012.1	—0.3	27.3	—0.7	16.5	—0.8	21.9	—0.8	0	0

M. HAMED MOHAMMAD.

Acting Director, Meteorological Service.

State of the River

Lake Albert at Butiaba rose 2 centimetres during the month. Its level on May 1st, 1946 was 71 centimeters below the normal and 23 centimeters above the level of the corresponding day of last year.

The Bahr el Jebel at Juba which was almost steady for the first 19 days, rose afterwards with some fluctuations till the end of the month. The levels were on the average 74 centimeters below the normal but 20 centimeters above those of last year.

At Nasser, the River Sobat rose slightly during the first fortnight and fell steadily thereafter until the end of the month. The levels were on the average 44 centimeters below the normal and almost identical with those of last year.

The White Nile at Malakal fell at faster rate than normal rate. The levels were in general 49 centimeters below the normal but were almost identical with those of last year. At Gebel Aulia, regulation for emptying the Reservoir was still proceeding, the levels downstream having fallen a few centimeters during the whole month.

The Blue Nile at Roseires fell slightly till the 9th then rose till the 14th, and fluctuated afterwards with a slight tendency to fall. The levels were in general much above both the normal and last year's levels throughout the month. At Khartoum the river recorded the same features which prevailed D.S. Gebel Aulia.

The Main Nile at Kajarti was affected by the contribution from the Gebel Aulia Reservoir; the levels fell slightly during the whole month, and were in general 75 centimeters above the normal and 21 centimeters above those of last year.

The difference of the mean levels in April 1946 from those of April 1945, and from the normal 1906-1935 were :

STATION	DIFFERENCE OF MEAN LEVELS	
	APRIL 1946 minus APRIL 1945	APRIL 1946 minus Normal
	Metre	Metre
Butiaba *	+ 0.23	- 0.71
Juba	+ 0.20	- 0.74
Nasser †	+ 0.01	- 0.44
Malakal	- 0.03	- 0.49
Roseires	+ 0.40	+ 0.30
Khartoum	+ 0.24	+ 0.19
Kajarti	+ 0.21	+ 0.75

* For May 1st, 1946.

† Nasser normal is for 1922-1935 only.

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Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR MAY, 1946

THE WEATHER

Cool for the first half of the month, with severe and widespread rainstorms and thunderstorms. Very warm during the second half; thunderstorms on the 22nd.

At the beginning of the month a depression was situated over the Eastern Mediterranean, with a secondary over Upper Egypt; the latter reached the northern Red Sea on the following day, deepening considerably, and the weather became unsettled to a remarkable degree. Thunderstorms and heavy rain took place in the afternoon throughout the eastern part of Egypt, the storms in many places being accompanied by large hailstones. Among the highest amounts recorded during this storm were: 30 millimetres at Mansura, 29 at Attaka, 26 at Port Said, 24 at Ismailia, 23 at Cairo, and 19 at Tantah, while many places recorded more than ten millimetres. Alexandria and the western part of Egypt completely escaped the storm. The wind reached strong gale force in many districts, and a velocity of 100 kilometres per hour from the northwest was registered at Helwan, with a very pronounced fall in temperature.

On the 5th a shallow depression appeared over the western desert, advancing slowly eastwards and giving rise to warm southeasterly winds with very light local showers. With the arrival on the 7th of northwesterly winds the temperature again fell to well below normal.

On the morning of the 9th a depression was located in the desert south of Siwa Oasis; it advanced rapidly across Egypt. The sky became completely overcast and in the afternoon severe thunderstorms with strong winds and heavy showers occurred throughout the greater part of Lower Egypt. A velocity of 110 kilometres per hour was registered in a gust at Helwan. Cool weather with moderate northerly winds followed and was maintained until the middle of the month.

During the third week the wind went round to the northeast and the weather became warmer. A depression appeared in the Libyan desert on the 21st; during its approach hot easterly and southerly winds prevailed, the temperature in Cairo district on that day rising to 41 °C (106 °Fahr). On the following day depressions were passing over the Delta and Upper Egypt, and conditions were very disturbed. Thunderstorms and moderately heavy showers occurred in many localities, and sand storms were widespread; the wind reached 92 kilometres per hour in Cairo, and the heat wave weakened, but on the 24th Egypt again came under the influence of a depression in the west, and during its approach hot southerly winds prevailed, the temperature on the 25th reaching 42 °C (108 °Fahr) in Cairo and 45°C (113 °Fahr) at Luxor. The cold front passed Cairo in the evening, and on the next day the temperature did not rise above 30 °C (86 °Fahr). Cool weather was enjoyed for a few days, but on the 29th hot southerly winds again traversed Egypt.

For the month as a whole the barometric pressure was well below normal in all districts, while the temperature was slightly above normal except in Upper Egypt and the western Desert. Rainfall was considerably in excess of the normal, thunderstorms being more prevalent than usual. Duration of sunshine at Giza was 10.4 hours per day, the normal being 11.0 hours.

DEPARTURE FROM NORMAL FOR MAY 1946

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		(MAX + MIN)/2			
	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I.—Mediterranean ...	1011.6	—1.8	26.2	+0.4	18.0	+0.5	22.1	+0.4	9	+ 7
II.—Lower Egypt ...	1011.7	—2.1	31.4	0.0	15.8	+0.5	23.6	+0.2	17	+14
III.—Middle Egypt ...	1011.7	—1.3	32.6	0.0	17.5	+0.6	25.0	+0.3	17	+15
IV.—Upper Egypt ...	1010.7	—0.9	36.8	—0.1	19.3	—0.3	28.0	—0.2	3	+ 2
V.—Western Desert...	1012.4	—0.6	35.6	—0.4	18.4	+0.1	27.0	—0.2	1	+ 1
VI.—Red Sea ...	1009.4	—1.4	31.1	—0.3	20.7	—0.5	25.9	—0.4	0	0

L. J. SUTTON,

Director, Meteorological Service.

State of the River

Lake Albert at Butiaba fell 1 centimetre during the month. Its level on June 1, 1946 was 77 centimetres below the normal and 12 centimetres above the corresponding day of last year.

The Bahr el Jebel showed some sharp fluctuations during the month. Its level was well above the normal on the 3rd and 31st. The levels were on the average 58 centimetres below the normal but 20 centimetres above those of last year.

The River Sobat at Nasser rose sharply until the 20th, then fell slightly until the 25th and rose again gradually till the end of the month. The levels were on the average 43 centimetres below the normal and 27 centimetres below those of last year.

The White Nile at Malakal rose gradually at normal rate. The levels were in general 51 centimetres below the normal but almost identical with those of last year's.

The Blue Nile at Roseires was almost steady until the 26th then rose sharply till the end of the month. The levels were on the average 19 centimetres below the normal and 51 centimetres below those of last year. At Khartoum the river was almost steady until the 10th, then fell with some fluctuations until the end of the month. The levels were on the whole 24 centimetres below the normal but 27 centimetres above those of last year.

At Khashm el Girba, on the river Atbara, readings were recorded during the whole month and the levels were on the whole 14 centimetres above the normal.

At Kajnarti on the Main Nile, the river fell rapidly till the end of the month owing to the cessation of the contribution from Gebel Aulia Reservoir. The levels were on the average 22 centimetres above the normal and 70 centimetres above those of last year.

The difference of the mean levels in May 1946 from those of May 1945 and from the the normal (1906-1935) were :

STATION	DIFFERENCE OF MEAN LEVELS	
	MAY 1946 minus MAY 1945	MAY 1946 minus Normal
	Metre	Metre
Butiaba *	+ 0·12	— 0·77
Juba	+ 0·20	— 0·58
Nasser †	— 0·27	— 0·43
Malakal	— 0·01	— 0·51
Roseires	— 0·51	— 0·19
Khartoum	+ 0·27	— 0·24
Khashem el Girba	—	+ 0·14
Kajnarti	+ 0·70	+ 0·22

* For June 1st, 1946.

† Nasser normal is for 1922-1935 only.

Y. M. SIMAKA,
*Director, Hydrological Service,
Physical Department.*

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR JUNE, 1946

Except during the first few days the weather was of the usual settled summer type, with small departures from average conditions.

At the beginning of the month a depression situated over Cyrenaica gave rise to warm southerly winds and khamisin conditions; the air was very dry, the relative humidity in Cairo in the early afternoon of the 2nd. falling to 8 per cent. The temperature in Cairo district rose to 44° C., (111° F.). The depression passed in the evening and the arrival of the northwest winds brought a rapid and considerable fall in temperature, which on the following day did not rise above 32° C. (90° F.). A cool spell lasted from the 7th. to the 10th., with day temperatures for the most part three or four degrees below normal.

For the next week temperatures were slightly above average. On the 18th. south-westerly winds again prevailed over the Delta, and the weather became warmer, the temperature in Cairo rising to 39° C., (102° F.), but this minor heat wave was of short duration. From the 19th. until the end of the month conditions were settled, with northerly winds and temperatures slightly below average.

For the month as a whole the mean atmospheric pressure was slightly below normal in Lower Egypt and slightly above elsewhere, while the mean temperature was slightly above normal in Lower and Middle Egypt and below elsewhere. The night temperature in Cairo was two or three degrees above normal continuously throughout the month. Relative humidity in Alexandria and Cairo was slightly below normal. Duration of sunshine at Giza averaged 12.4 hours per day, which equals the normal amount.

DEPARTURE FROM NORMAL FOR JUNE 1946

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		(MAX + MIN)/2			
	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I.—Mediterranean ...	1011.6	—0.3	28.4	+0.2	20.5	+0.8	24.4	+0.5	0	0
II.—Lower Egypt ...	1011.6	—0.4	33.7	0.0	18.9	+0.8	26.3	+0.4	0	0
III.—Middle Egypt ...	1011.8	+0.2	34.9	—0.1	20.4	+0.8	27.6	+0.4	0	0
IV.—Upper Egypt ...	1009.9	+0.2	38.9	+0.1	21.9	0.0	30.4	0.0	0	0
V.—Western Desert...	1012.4	+0.6	37.5	—1.3	21.2	+0.3	29.4	—0.5	0	0
VI.—Red Sea ...	1008.4	0.0	33.2	—0.1	23.9	—0.1	28.6	—0.1	0	0

RAINFALL DATA FOR JUNE 1946

Station	1946	Diff. From Normal
	mm.	mm.
Juba ...	196	+ 60
Wau ...	165	+ 2
Malakal ...	145	+ 21
El-Obeid ...	82	+ 45
El-Fasher ...	48	+ 32
Khartoum ...	1	— 8
Addis Ababa*	—	—
Roseires ...	160	+ 29
Wad Medani ...	30	— 2
Atbara ...	0	— 2
Kassala ...	60	+ 31
Port Sudan ...	0	0

*Not yet received.

L. J. SUTTON,
Director, Meteorological Service.

State of the River

Lake Albert at Butiaba rose 3 cms. during the month. Its level on July 1st., 1946, was 77 cms. below the normal and 14 cms. above the corresponding day of last year.

The Bahr el Jebel at Juba fluctuated sharply throughout the whole month. The levels were on the average 20 cms. below the normal but 45 cms. above those of last year.

The River Sobat at Nasser continued to rise at faster than normal rate till the end of the month. The levels were on the average below both the normal and those of last year's.

The White Nile at Malakal continued its rise throughout the whole month. The levels were in general 31 cms. below the normal and 17 cms. below those of last year.

The sharp fluctuations of the Blue Nile at Roseires were the remarkable features of the month. The levels were on the average 64 cms. above the normal and 51 cms. above those of last year's. At Khartoum the river remained steady until the 6th., then rose sharply till the 9th. and fluctuated slightly with a rising tendency thereafter. The levels were as a whole 22 cms. below the normal and 8 cms. below those of last year's.

The River Atabra at Khashm el Girba remained steady till the 7th. then rose sharply till the 20th. and fluctuated sharply thereafter. The levels were on the average, well above both the normal and last year's.

The Main Nile at Kajnarti fell steadily until the end of the month. The levels were on the whole 62 cms. below the normal and 52 cms. below those of last year's.

The difference of the mean levels in June 1946 from those of June 1945 and from the normal 1906-1935 were :—

STATION	DIFFERENCES OF THE MEAN LEVELS	
	JUNE 1946 minus JUNE 1945	JUNE 1946 minus Normal
	Metre	Metre
Butiaba *	+ 0·14	— 0·77
Juba	+ 0·45	— 0·20
Nasser †	— 0·16	— 0·23
Malakal	— 0·17	— 0·31
Roseires	+ 0·51	+ 0·64
Khartoum	— 0·08	— 0·22
Khashm el Girba	+ 0·29	+ 0·47
Kajnarti	— 0·52	— 0·62

* For July 1st., 1946.

† Nasser normal is for 1922-1935 only.

Y. M. SIMAIKA,
*Director, Hydrological Service,
Physical Department.*

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR JULY 1946

The Weather

The weather during July was of the usual settled summer type, free from disturbances and with no large divergencies from average conditions.

Temperatures were somewhat above normal for the first week, especially at night, but for a week beginning on the 11th the weather was cooler than usual. A minor spell, of warm weather set in on the 19th in which the temperature in Cairo district reached 39°C. (102°F.), or 4°C. above normal. This spell also lasted for a week, after which average conditions obtained.

For the month as a whole, the mean barometric pressure was everywhere below normal though not by large amounts. The temperature was slightly above normal throughout Lower Egypt, and a little below elsewhere. Except for a few days in the middle of the month the nights in Cairo were continuously rather warmer than usual. Early morning mists occurred on a few occasions, but at both Cairo and Alexandria the humidity was below average on all but six days. Duration of sunshine at Giza averaged 11.9 hours per day, which equals the normal amount.

DEPARTURE FROM NORMAL FOR JULY 1946

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		(MAX + MIN)/2			
	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I.—Mediterranean ...	1008.5	−0.5	30.1	+0.5	22.2	+0.3	26.2	+0.4	0	0
II.—Lower Egypt ...	1008.5	−0.8	34.4	+0.1	20.4	+0.6	27.4	+0.4	0	0
III.—Middle Egypt ...	1008.8	−0.2	36.1	+0.3	21.8	+0.6	29.0	+0.4	0	0
IV.—Upper Egypt ...	1007.6	−0.2	39.0	0.0	22.8	−0.2	30.9	−0.1	0	0
V.—Western Desert...	1009.7	−0.1	38.1	−0.2	21.4	−0.4	29.8	−0.3	0	0
VI.—Red Sea ...	1005.2*	−1.1	34.3	+0.1	25.4	0.0	29.8	0.0	0	0

* Quseir only.

RAINFALL DATA FOR JULY 1946

Station	1946	Diff. From Normal
	mm.	mm.
Juba ...	227	+ 88
Wau ...	209	+ 16
Malakal ...	175	+ 6
El-Obeid ...	193	+ 90
El-Fasher ...	78	− 26
Khartoum ...	117	+ 62
Addis Ababa* ...	—	—
Roseires ...	114	− 67
Wad Medani ...	202	+ 64
Atbara ...	59	+ 40
Kassala ...	99	+ 8
Port Sudan ...	13	+ 6

* No readings available.

L. J. SUTTON,
Director, Meteorological Service.

State of the River

Lake Albert at Butiaba rose 2 centimetres during the month. Its level on August 1, 1946 was 77 centimetres below the normal but 8 centimetres above the level of the corresponding day of last year.

The Bahr el-Jebel at Juba fluctuated slightly with a falling tendency during the whole month. The levels were on the average 50 centimetres below the normal but almost identical with those of last year.

The River Sobat at Nasser rose gradually at normal rate. The levels were in general below both the normal and those of last year.

The White Nile at Malakal continued its rise at almost normal rate. The levels were generally 20 centimetres below the normal but almost identical with those of last year. At Gebel Aulia regulation for filling the reservoir was still proceeding.

At Roseires on the Blue Nile several sharp flushes gradually increasing in height were recorded during the month, the most prominent of which was a peak of 21·27 metres on the 31st, when the level was 3·20 metres above the normal. This was the highest recorded in July since 1900 when records began. The levels were on the whole 1·70 metres above both the normal and those of last year. At Khartoum the sharp fluctuations which occurred at Roseires were slightly damped by the filling of Sennar Reservoir as well as by the effect of the levels of Mogren pool. The levels were in general 43 centimetres above the normal and 1·15 metres above those of last year.

Violent fluctuations were recorded on the River Atbara at Khashm el-Girba, the highest was that on the 15th when the level was 1·37 metres above the normal. The levels were on the average 34 centimetres above the normal and 49 centimetres above those of last year.

The main Nile at Kajnarti continued its rise at faster than normal rate till the 29th, then fell slightly till the end of the month. The levels were in general 1·15 metres above the normal and 1·90 metres above those of last year.

The difference of the mean levels in July 1946 from those of July 1945 and from the normal 1906-1935 were :—

STATION	DIFFERENCES OF MEAN LEVELS	
	JULY 1946 minus JULY 1945	JULY 1946 minus Normal
	Metre	Metre
Butiaba *	+ 0·08	— 0·77
Juba	+ 0·02	— 0·50
Nasser †	— 0·10	— 0·21
Malakal	— 0·03	— 0·20
Roseires	+ 1·70	+ 1·70
Khartoum	+ 1·15	+ 0·43
Khashm el-Girba	+ 0·49	+ 0·34
Kajnarti	+ 1·90	+ 1·15

* For August 1, 1946.

† Nasser normal is for 1922-1935 only.

Y. M. SIMAIKA,
Director, Hydrological Service,
Physical Department.

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR AUGUST 1946

The Weather

With small exceptions conditions were of the usual settled summer type, but the temperature was somewhat above normal almost continuously throughout the month, and in Cairo reached 38° C. (100° F.) on several days.

The sky was completely overcast with low cloud on the early morning of the 6th, and on the following two days there was a fall in the barometric pressure over the eastern Mediterranean, and for a short time the wind in Lower Egypt blew from a southerly direction as a result,—a rare occurrence at this time of year; there was much high cloud on the 8th and 9th.

Early morning cloud was as usual frequent during the month; on the 18th to 20th light mist formed in the cultivated areas near Cairo, the morning of 20th being particularly damp, but the afternoon was unusually dry, the humidity in Cairo falling from 90 per cent at 8 o'clock in the morning to 16 per cent at 2 o'clock in the afternoon.

After the 22nd, when the temperature in Cairo reached 38° C. (100° F.), the weather became cooler, and by the 25th the maximum temperature had fallen to its normal value of 34° C. (93° F.). This comparatively cool spell lasted however only two days, and on the 27th winds blew from a southerly quarter for the second time in the month, and the temperature in Cairo again rose to 38° C, while on the 27th and 28th it reached 45° C. (113° F.) at Siwa Oasis; this was the highest value registered during the month at any station in Egypt.

Northerly winds then succeeded, and by the end of the month the temperature had fallen to just below normal.

For the month as a whole the mean barometric pressure was everywhere appreciably below normal while the temperature was above, by an average of 1° C in Lower Egypt and half this amount in Upper Egypt. On account of the high temperature the relative humidity was below normal. Duration of sunshine at Giza averaged 11.2 hours per day, which is 0.4 hours below the normal amount.

DEPARTURE FROM NORMAL FOR AUGUST 1946

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		(MAX + MIN)/2			
	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I.—Mediterranean ...	1008.5	—1.0	31.5	+1.2	23.5	+0.8	27.5	+1.0	0	0
II.—Lower Egypt ...	1008.5	—1.4	35.2	+1.1	21.0	+1.0	28.1	+1.0	0	0
III.—Middle Egypt ...	1008.9	—0.7	36.5	+1.3	22.2	+0.6	29.4	+1.0	0	0
IV.—Upper Egypt ...	1008.0	—0.3	39.5	+0.9	23.0	—0.2	31.2	+0.4	0	0
V.—Western Desert...	1009.6	—0.6	39.3	+1.2	21.5	—0.1	30.4	+0.6	0	0
VI.—Red Sea (Egypt).	1005.7	—0.7	35.9	+1.5	25.5	—0.5	30.7	+0.5	0	0

RAINFALL FOR AUGUST 1946

Station	1946	Diff. From Normal
	mm.	mm.
Juba	90	— 36
Wau	300	+ 92
Malakal	311	+125
El-Obeid	211	+ 89
El-Fasher	118	— 14
Khartoum	63	— 8
Addis Ababa	346	+ 59
Roseires	221	+ 6
Wad Medani	126	— 13
Atbara	29	— 8
Kassala	149	+ 25
Port Sudan	Drops	— 3

L. J. SUTTON,
Director, Meteorological Service.

State of the River

Lake Albert at Butiaba rose 26 centimetres during the month. Its level on September 1, 1946 was 58 cms. below the normal and 10 cms. above the corresponding day of last year.

The Bahr el Jebel at Juba rose sharply till the tenth then fluctuated violently till the end of the month. The levels in general, were 36 cms. above the normal and 71 cms. above those of last year.

The River Sobat at Nasser rose steadily at faster than normal rate throughout the month. The levels were on the average 7 cms. above the normal but almost identical with those of last year.

The White Nile at Malakal also rose at faster than normal rate throughout the month. Its rise went on steadily until the 20th but a sharp rise set in thereafter. The levels were in general 16 cms. above the normal and 35 cms. above those of last year.

The Blue Nile at Roseires fluctuated violently throughout the month. Two abnormal peaks reaching levels of 22.48 ms. and 22.68 ms. were recorded on the 10th and 24th respectively, the first peak was 3.48 metres above the normal and the second was 3.42 metres above it. In general, the levels were 2.36 metres above the normal and 2.78 metres above those of last year. At Khartoum the river rose sharply with slight fluctuations till the end of the month. An abnormal level was recorded on the 30th of the month, when it was 17.13 metres being 1.44 metres above the normal. The levels were on the whole 1.16 metres above the normal and 1.80 metres above those of last year. At both Roseires and Khartoum the maximum levels during the month were the highest ever recorded since observations began at Khartoum in 1899 and at Roseires in 1905.

The River Atbara at Khashm el Girba fluctuated violently throughout the month attaining a maximum level of 16.45 cms. on the 11th when it was 2.35 ms. above the normal. The levels were in general 2.41 ms. above the normal and 2.95 ms. above those of last year.

The Main Nile at Kajnarti rose at much faster than normal rate throughout the month. The levels were on the whole 2.41 ms. above the normal and 2.95 ms. above those of last year.

The difference of the mean levels in August 1946 from those of August 1945 and from the normal 1906-1935 were :

STATION	DIFFERENCES OF MEAN LEVELS	
	AUGUST 1946 minus AUGUST 1945	AUGUST 1946 minus Normal
	Metre	Metre
Butiaba *	+ 0.10	— 0.58
Juba	+ 0.71	+ 0.36
Nasser †	— 0.01	+ 0.07
Malakal	+ 0.35	+ 0.16
Roseires	+ 2.78	+ 2.36
Khartoum	+ 1.80	+ 1.16
Khashm el Girba	+ 1.79	+ 1.55
Kajnarti	+ 2.95	+ 2.41

* For September 1st, 1946.

† Nasser normal is for 1922-1935 only.

Y. M. SIMAIKA,
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Physical Department.

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR SEPTEMBER 1946

The Weather

The warmest September generally in Egypt for at least forty years: showers throughout Lower Egypt at the end of the month.

During the first week the distribution of barometric pressure was of the usual summer type, with the temperature a few degrees above normal. On the 7th 41° C. (106° F.) was registered at Suez, being the highest there for September since 1921.

On the 9th a shallow depression developed over the eastern Mediterranean and warm winds from a southerly quarter prevailed over Lower Egypt. The temperature in Cairo district rose to 40° C. (104° F.) being 8° C. above normal, and the heat wave extended throughout the country. By the 11th the depression had moved to Syria and the arrival of northwest winds brought cooler weather, the temperature falling day by day until the 16th, when it reached the normal value of 32° C. (90° F.) in Cairo.

On the 18th a small depression appeared off Mersa Matruh, where a light thunderstorm occurred in the evening, and on the following day the winds became southerly and the weather much warmer, the temperature in Middle and Upper Egypt rising to 38° C. (100° F.). The warm spell lasted until the 20th when high pressure was again established. Light showers took place at Port Said on the morning of the following day, and temperatures throughout Egypt gradually fell to normal by the 24th.

At the end of the month the weather was disturbed to an unusual extent for the time of year. A thunderstorm occurred at Matruh with light rain in the early morning of the 30th, while during the night there were sharp showers throughout Lower and Middle Egypt the largest amounts recorded being 8 millimetres at Bir Hooker in Wadi Natrun and 6 millimetres at Tanta.

For the month as a whole the mean atmospheric pressure was everywhere below normal while the temperature was considerably above normal in all districts, this month being in many places the warmest September for at least forty years. In Cairo the day temperature fell to normal on only four occasions, while the night temperature was continuously above normal. Owing to the high temperature the air was drier than usual, the relative humidity in Cairo averaging 59 per cent compared with the normal value of 64 per cent. Duration of sunshine at Giza averaged 10.6 hours per day, which equals the normal amount.

DEPARTURE FROM NORMAL FOR SEPTEMBER 1946

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		(MAX + MIN)/2			
	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I.—Mediterranean ...	1012.1	—0.9	31.1	+1.6	23.0	+1.6	27.0	+1.6	1	+ 1
II.—Lower Egypt ...	1012.1	—1.3	33.7	+1.3	20.5	+2.1	27.1	+1.7	2	+ 2
III.—Middle Egypt ...	1012.2	—0.8	34.6	+2.1	21.5	+1.8	28.0	+2.0	drops	0
IV.—Upper Egypt ...	1011.0	—0.2	38.0	+2.0	22.6	+1.4	30.3	+1.7	drops	0
V.—Western Desert...	1012.6	—0.8	37.7	+2.3	21.4	+1.9	29.6	+2.1	drops	0
VI.—Red Sea (Egypt).	1008.6	—0.8	34.6	+2.3	25.0	+0.8	29.8	+1.6	0	0

RAINFALL FOR SEPTEMBER 1946 (IN M. M.)

Station	1946	Diff. From Normal
	mm.	mm.
Juba	71	— 36
Wau	202	+ 31
Malakal	104	— 29
El-Obeid	154	+ 78
El-Fasher	62	+ 29
Khartoum	36	+ 17
Addis Ababa	139	— 50
Roseires	124	— 24
Wad Medani	162	+ 102
Atbara	drops	— 6
Kassala	5	— 50
Port Sudan	0	0

L. J. SUTTON,
Director, Meteorological Service.

State of the River

Lake Albert at Butiaba rose 17 cms. during the month. Its level on October 1st, 1946 was 49 cms. below the normal but 13 cms. above the corresponding day of last year.

The Bahr el Jebel at Juba fell with numerous fluctuations during the whole month. The levels on the average were identical with the normal but were 40 centimetres above those of last year's.

The River Sobat at Nasser rose gradually at faster than normal rate. The levels were above both the normal and last year's throughout.

The White Nile at Malakal continued to rise during the whole month. The levels were well above both the normal and those of last year's throughout.

With the exception of two flushes which occurred between the 3rd, and the 14th of the month, the Blue Nile at Roseires fell rapidly throughout the whole month. The levels were on the average 57 centimetres above the normal but 16 cms. below those of last year's. At Khartoum the Blue Nile repeated the same features which were recorded at Roseires.

The River Atbara at Khashm el Girba fell Sharply during the whole month with slight fluctuations. The levels on the average were 18 centimetres above the normal but 15 centimetres below those of last year's.

At Kajnarti on the Main Nile, the River fell rapidly throughout the month. The levels were in general 1.81 metres above the normal and 2.20 meters above those of last year's.

The difference of the mean levels in September 1946 from those of September 1945 and from the normal 1906-1935 were: —

STATION	DIFFERENCES OF MEAN LEVELS	
	SEPTEMBER 1946 minus SEPTEMBER 1945	SEPTEMBER 1946 minus Normal
	Metre	Metre
Butiaba*	+ 0.13	— 0.49
Juba	+ 0.40	0.00
Nasser †	+ 0.18	+ 0.48
Malakal	+ 0.76	+ 0.64
Roseires	— 0.16	+ 0.57
Khartoum	+ 0.88	+ 0.54
Khashm el Girba	— 0.15	+ 0.18
Kajnarti	+ 2.20	+ 1.81

* For October 1st, 1946.

† Nasser normal is for 1922-1935 only.

Y. M. SIMAIKA,
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Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR OCTOBER 1946

The Weather

Changeable during the first half of the month. Thunderstorms in the northwestern part of the Delta on the 1st and 14th. Moderate heat wave during the second week. Widespread dust storms in the middle of the month.

At the beginning of the month winds were mainly northeasterly and the weather warm but unsettled. Thunderstorms occurred in the Rosetta area where rain was particularly heavy, 23 millimetres being recorded there, while showers occurred practically throughout Lower Egypt. Very light rain was reported from as far south as Minya. With the formation of high pressure west of Egypt conditions became settled and cooler by the 4th.

On the 11th a shallow depression appeared near Crete, resulting in warm southerly winds over Lower Egypt, the temperature in Cairo reaching 36° C. (97° F.) on that day. The depression passed on the next day and the winds became northwesterly, with an appreciable fall in temperature. The break however was very short, as on the 13th. Egypt fell under the influence of a deep depression which was situated over the central Mediterranean. The wind again blew from the south and the temperature rose to 35° C. (95° F.) in Alexandria and to 37° C. (99° F.) in Cairo, while moderate khamsin conditions and dust storms prevailed for two days. The cold front of this depression passed Alexandria in the morning and Cairo in the evening of the 14th, the wind veering rapidly to northwest. A severe thunderstorm occurred in the Rosetta district during the night, and there were sharp showers throughout most of the Delta; at Borollos 32 millimetres of rain were recorded. The weather was much cooler on the following day, when the temperature in Cairo did not rise above 29° C. (84° F.).

Milder weather with southerly winds followed on the 17th. and 18th, but by the next day cool northwesterly winds again traversed Egypt, and the maximum temperature in Cairo on the two succeeding days fell to 27° C. (81° F.), while light showers occurred in the northern part of the Delta.

Under the influence of a system of high pressure in the west the weather became gradually milder, and northeasterly winds prevailed almost daily for the rest of the month. A velocity of 57 kilometres an hour was registered at Helwan on the 23rd. There were light showers in Cairo district on the 24th and near Ismailia on the following day. The temperature was practically normal every day of the last week.

For the month as a whole the mean atmospheric pressure was slightly below normal in Lower Egypt and above in Upper Egypt. The mean temperature departed very little from normal in any district. Rainfall was above normal on the Mediterranean coast but below normal elsewhere. Relative humidity was generally well below normal on account of the frequency of southerly winds. Sunshine at Giza averaged 9.3 hours a day, which equals the normal amount.

DEPARTURE FROM NORMAL FOR OCTOBER 1946

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		(MAX + MIN)/2			
	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I.—Mediterranean ...	1015.6	—0.2	28.4	+0.4	19.8	+0.5	24.1	+0.4	12	+ 5
II.—Lower Egypt ...	1015.6	—0.6	29.8	—0.6	17.0	+0.4	23.4	—0.1	1	— 3
III.—Middle Egypt ...	1015.8	0.0	30.6	+0.3	17.7	+0.1	24.2	+0.2	drops	— 2
IV.—Upper Egypt ...	1014.5	+0.3	33.5	+0.1	18.8	+0.2	26.2	+0.2	drops	0
V.—Western Desert...	1016.1	+0.4	32.2	—0.5	16.8	+0.2	24.5	—0.2	0	0
VI.—Red Sea	1012.4	—0.8	30.4	+0.3	20.0	—0.5	25.2	—0.1	0	— 1

L. J. SUTTON,
Director, Meteorological Service.

State of the River

Lake Albert at Butiaba rose 14 cms. during the month. Its level on November 1st. 1946, was 42 cms. below the normal but 20 cms. above the corresponding day of last year.

The Bahr el Jebel at Juba fluctuated slightly below normal during the whole month. The levels on the average were 30 cms. below the normal, but were 21 cms. above those of last year.

The River Sobat at Nasser continued its rise at faster than normal rate. The levels were well above both the normal and last year's throughout.

The White Nile at Malakal remained almost steady throughout the month. The levels were about half a metre above both the normal and those of last year.

With the exception of two flushes which occurred between the 1st. and the 19th. of the month, the Blue Nile at Roseires fell at almost normal rate throughout the month. On the average the levels were 71 cms. above the normal but 20 cms. below those of last year. At Khartoum a few days later, the Blue Nile repeated its general features which occurred at Roseires.

The River Atbara at Kashm el Girba fell with slight fluctuations during the whole month. The levels on the average were 24 cms. above the normal and 10 cms. above those of last year.

With the exception of the last five days of the month when the levels were almost steady, the Main Nile at Kajarti fell a little faster than normal rate throughout. On the average the levels were 7 cms. above the normal but 22 cms. below last year's.

The difference of the mean levels in October 1946 from those of October 1945, and from the normal 1906-1935 were :—

STATION	MEAN DIFFERENCE OF LEVELS	
	OCTOBER 1946 minus OCTOBER 1945	OCTOBER 1946 minus Normal
	Metre	Metre
Butiaba*	+ 0.20	— 0.42
Juba	+ 0.21	— 0.30
Nasser †	+ 0.36	+ 0.67
Malakal	+ 0.50	+ 0.54
Roseires	— 0.20	+ 0.71
Khartoum	— 0.05	+ 0.04
Khashm el Girba	+ 0.10	+ 0.24
Kajarti	— 0.22	+ 0.07

* For November 1st., 1946.

† Nasser normal is for 1922-1935 only.

Y. M. SIMAIKA,
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Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR NOVEMBER 1946

NOV 13 1947

The Weather

Prolonged heat wave in the middle of the month ; thunderstorms with heavy rain in the last week, especially along the Mediterranean coast.

During the first week, Egypt was an area of high pressure, with winds chiefly from the northeast and mild anticyclonic weather ; early morning mists were common.

A shallow depression passed north of Egypt on the 10th and 11th., and heavy cloud formed, giving light scattered showers in the Delta. By the following day high pressure was established over the eastern Mediterranean and Egypt, and winds again blew from the northeast, becoming easterly, while the weather became steadily warmer day by day, reaching a peak on the 15th. and 16th. On the following day Egypt came under the influence of an extensive depression over the central Mediterranean, and the wind veered to the south, prolonging and in some places intensifying the heat wave, so that in several districts the temperature was as much as 9° C. (16° F.) above the normal for the time of year. During this period the temperature reached 32° C. (90° F.) at Alexandria, 33° C. (91° F.) in Cairo, and 35° C. (95 F.) at Suez, the normal values being 25 - 26° C. (77 - 79° F.). The heat wave began to weaken on the 19th., when the winds became southwesterly, while by the following afternoon they were northwest and the temperature fell almost to normal.

Cloudy, unsettled weather began on the 22nd., with the formation of a shallow trough of low pressure over Palestine and over the northern Red Sea, and light showers occurred near the coast. Conditions became much more unsettled on the 25th., when there were widespread rainstorms, accompanied in some places by lightning and thunder. On that day 65 millimetres of rain were registered at Borolos, 40 mms. at Damanhur and 36 at Rosetta. For the remainder of the month conditions were generally disturbed throughout Lower Egypt, thunderstorms and heavy rain occurring in many localities, especially near the Mediterranean coast, but extending also across the eastern desert to the Gulf of Suez, while there were light showers as far south as Minya. During this period 79 millimetres were recorded at Borolos, 66 at Rosetta, 40 at Damanhur, 37 at Mex, 25 at Mariut and 21 at Alexandria. In Cairo district there was distant lightning, but rain was very light.

For the month as a whole, the mean barometric pressure was practically normal in all districts, while the temperature was everywhere much above normal. In Cairo the day temperature was continuously above normal except on the 27th., while after the 5th., the night temperature was also continuously above normal. In spite of the heavy rain during the last week, rainfall was slightly below normal along the Mediterranean coast as a whole. It was slightly above normal generally in Lower Egypt, and below elsewhere. Duration of sunshine at Giza averaged 8.1. hours per day, which equals the normal amount.

DEPARTURE FROM NORMAL FOR NOVEMBER 1946

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		(MAX + MIN) 2			
	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I.—Mediterranean ...	1017.3	+0.1	26.4	+1.8	17.7	+2.1	22.0	+2.0	18	— 4
II.—Lower Egypt ...	1017.6	0.0	27.5	+1.4	14.9	+1.5	21.2	+1.4	12	+ 3
III.—Middle Egypt ...	1017.4	0.0	27.8	+1.8	15.4	+1.4	21.6	+1.6	drops	— 3
IV.—Upper Egypt ...	1016.1	—0.5	30.0	+1.6	15.0	+1.4	22.5	+1.5	drops	0
V.—Western Desert...	1017.4	—0.5	28.2	+0.7	13.0	+1.2	20.6	+1.0	0	0
VI.—Red Sea	1014.3	—1.1	28.1	+1.1	17.4	+0.7	22.8	+0.9	0	— 2

L. J. SUTTON,
Director, Meteorological Service.

State of the River

Lake Albert at Butiaba rose 16 cms., during the month. Its level on December 1st., 1946, was 31 cms. below the normal but 32 cms. above the corresponding day of last year.

The Bahr el Jebel at Juba fluctuated very slightly during the first ten days and fell at almost normal rate for the second ten days, after which date the readings ceased to be wired.

The River Sobat at Nasser started its annual fall by the beginning of the month. The levels fell nearly at normal rate and were continuously well above both the normal and those of last year.

The White Nile at Malakal rose only 6 cms., during the whole month. The levels were in general more than a half metre above both the normal and those of last year.

The Blue Nile at Roseires continued its fall at almost normal rate throughout the month. The levels were in general 80 cms. above the normal but 27 cms. below those of last year. At Khartoum, the River also fell at almost normal rate and the levels were on the average 32 cms. above the normal and 20 cms. above last year's.

The River Atbara at Khashm el Girba fell at little less than normal rate throughout the month. The levels, on the average, were 39 cms. above the normal and 22 cms. above those of last year.

The Main Nile at Kajarti fell at almost normal rate during the whole month. The levels were in general 65 cms. above the normal and 36 cms. above last year's.

The difference of the mean levels in November 1946 from those of November 1945, and from the normal 1906 - 1935 were :—

STATION	MEAN DIFFERENCE OF LEVELS	
	NOVEMBER 1946 minus NOVEMBER 1945	NOVEMBER 1946 minus Normal
	Metre	Metre
Butiaba*	+ 0·32	— 0·31
Juba †... ..	—	—
Nasser †	+ 0·36	+ 0·76
Malakal	+ 0·53	+ 0·58
Roseires	— 0·27	+ 0·80
Khartoum	+ 0·20	+ 0·32
Khashm el Girba	+ 0·22	+ 0·39
Kajarti	+ 0·36	+ 0·65

* Butiaba for December 1st., 1946.

† Nasser normal is for 1922-1935 only.

‡ Juba records are incomplete

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No. 26 1947

Ministry of Public Works, Egypt.—Physical Department

REPORT ON THE WEATHER AND STATE OF THE RIVER FOR DECEMBER 1946

The Weather

Three cold waves in the first three weeks. Very warm spell in the fourth week; ending with an abnormally intense cold wave which however was confined to Middle Egypt. An outstanding feature was the prevalence of southerly winds, which set in earlier and were more frequent than usual.

The weather was rather cooler than usual at the beginning of the month, and rain fell at several coastal places, with light showers in the Delta. The largest amount recorded was 13 millimetres at Tolombat on the 4th, and a hailstorm occurred at Rosetta on that day. The weather then became settled and milder, but on the 8th and 9th, cool south-westerly winds traversed Egypt; the wind velocity reached 63 kilometres an hour at Alexandria, and dust storms were general, while there were showers near the coast. The temperature was about average on the 10th and 11th, but on the following day a deep depression reached Crete, and cold southerly winds prevailed, the temperature in Lower Egypt being 5 or 6 °C. (9–11 °F.) below the normal for the time of year. In Cairo it did not rise above 17 °C. (63 °F.) compared with a normal of 22 °C. (72 °F.). The weather was very unsettled on the 13th and 14th, with heavy showers near the coast and in the north of the Delta. During these two days 29 millimetres were registered at Mariut, 21 at Alexandria and 16 at Rosetta.

The weather was mild and settled on the 15th and 16th, but again became cool and showery from 17th to 19th, though the rain was nowhere heavy. On the 18th the maximum temperature in Cairo again fell to 17 °C. Conditions then steadily improved with the formation of a system of high pressure over Egypt. Winds were light, chiefly northeasterly, and morning mists were widespread, especially from 21st to 23rd. Temperatures rose steadily until the 24th, under the influence of south-east winds, reaching 27 °C. (81 °F.) in Cairo district, compared with a normal of 20 °C. (68 °F.). There was a short break in this unusually warm spell on Christmas Day, when except in Upper Egypt the temperature was but little above average, but with the approach of a depression along the eastern Mediterranean winds again blew from the east and south and the weather again became abnormally warm. The depression passed during the afternoon of the 27th, and the weather rapidly became cold; the sky was mainly overcast for several days, and on the 30th and 31st light showers occurred throughout Middle Egypt and as far south as Minya, but no rain fell near the Mediterranean coast. It is interesting to note that on the 31st the maximum temperature both on the Mediterranean coast and in Upper Egypt was slightly above average, but in Cairo it did not rise above 13 °C. (55 °F.), being 7 °C. (13 °F.) below normal, and in fact this was the coldest day in December in Cairo at least since observations in Ezbekia Gardens began in 1909. The night temperature however was slightly above normal.

For the month as a whole the barometric pressure was much below normal in all districts. The pressure at Alexandria was lower than in any previous December for at least forty-five years; this was the cause of the prevalence of southerly winds, owing to which the air was much drier than usual. On the whole the temperature was about normal. Rainfall was much below normal in all districts; rain fell on seven days at Alexandria; there was very little rain anywhere after the middle of the month. There was less sunshine than usual, averaging 6.9 hours per day at Helwan and 5.8 hours at Giza, compared with normal values of 7.6 and 7.3 hours respectively.

DEPARTURE FROM NORMAL FOR DECEMBER 1946

DISTRICTS	BAROMETRIC PRESSURE		TEMPERATURE						RAINFALL	
			MAXIMUM		MINIMUM		(MAX + MIN)/2			
	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal	1946	Difference from Normal
	m.b.	m.b.	°C.	°C.	°C.	°C.	°C.	°C.	mm.	mm.
I.—Mediterranean ...	1015.7	—2.5	20.5	+0.1	11.1	0.0	15.8	0.0	11	—24
II.—Lower Egypt ...	1016.2	—2.8	21.1	—0.4	8.9	0.0	15.0	—0.2	3	—14
III.—Middle Egypt ...	1017.1	—2.0	21.4	+0.4	9.6	+0.1	15.5	+0.2	1	—3
IV.—Upper Egypt ...	1017.3	—1.7	23.3	0.0	8.7	—0.1	16.0	0.0	0	—2
V.—Western Desert...	1017.5	—2.4	22.4	—0.3	6.2	—0.5	14.3	—0.4	0	—1
VI.—Red Sea	1015.5	—2.0	24.0	+0.6	12.7	—0.1	18.4	+0.2	0	—1

L. J. SUTTON,

Director, Meteorological Service.

State of the River

Lake Albert at Butiaba rose 1 centimetre during the month. Its level on January 1, 1947, was 27 cms. below the normal but 40 cms. above the corresponding day of last year.

The Bahr el Jebel at Juba fell at normal rate during the whole month. The levels were in general 42 cms. below the normal but 17 cms. above those of last year.

The River Sobat at Nasser fell at less than normal rate during the month. The levels were on the whole 1.70 ms. above the normal and 51cms. above those of last year.

The White Nile at Malakal was almost steady during the whole month. The levels were well above both the normal and those of last year throughout.

The Blue Nile at Roseires fell at normal rate during the month. The levels were in general 69 cms. above the normal but were almost identical with last year's. At Khartoum the River fell at normal rate and the levels were above both the normal and those of last year.

The Main Nile at Kajnarti fell at almost normal rate. The levels were in general above both the normal and those of last year throughout the whole month.

The difference of the mean levels in December 1946 from those of December 1945, and from the normal 1906-1935 were :

STATION	MEAN DIFFERENCE OF LEVELS	
	DECEMBER 1946 minus DECEMBER 1945	DECEMBER 1946 minus Normal
	Metre	Metre
Butiaba*	+ 0.40	— 0.27
Juba	+ 0.17	— 0.42
Nasser †	+ 0.51	+ 1.70
Malakal	+ 0.61	+ 0.86
Roseires	— 0.09	+ 0.69
Khartoum	+ 0.27	+ 0.23
Kajnarti	+ 0.53	+ 0.54

* For January 1, 1947.

† Nasser normal is for 1922-1935 only.

The flood of 1946 may be classified as the third highest on record comparable only with the great floods of 1874 and 1878. To reduce it to safe levels in the Delta it was necessary to employ the Reservoir at Aswan to about two thirds of its total capacity.

The features of this flood may be summarised as follows :—

(1) At Roseires the furthest upstream station on the Blue Nile, remarkably high levels were recorded in July ; the maximum level was 21.27 or 3.20 metres above normal. In the very early days of August a great flood was signalled and two peaks of 22.48 metres and 22.68 metres were recorded 3.48 metres 3.42 metres above normal. In general the levels this year exceeded 21 metres by a big margin for 26 days whereas in 1938 flood (the most recent dangerous flood) it was only above 21 metres by a small margin for 10 days. At both Roseires and Khartoum much higher levels were reached than ever previously recorded ; but records at these stations do not go back beyond the beginning of the present century. At Khartoum a maximum of 17.13 metres was recorded or 1.44 metres above normal.

(2) At Khashm el Girba on the River Atbara which joins the Nile some 300 kilos north of Khartoum the levels this year were not record levels but were much higher than in 1938. A maximum level of 16.45 metres was recorded or 2.35 metres above normal.

(3) Regulation on Aswan Dam was made up to a level of 117.00 metres and a volume of about 2500 millions of cubic metres was held in the Reservoir between August 12th and September 17th. The regulation on the dam was arranged to suit the programmes of opening of the Basins, the level downstream being progressively raised as more and more of the Basins began to draw from the river. The paramount consideration being that the levels at Cairo should not exceed 20.35 metres at Roda or 21 pics and 13 kirats.

(4) The maximum volume abstracted in the Reservoir in one day was about 125 millions of cubic metres which meant a reduction on the Aswan gauge of about 50 cms. this went on for about 10 days. The corresponding reduction on Roda gauge was about 70 centimetres.

(5) At Aswan the natural levels after August 12 were never actually recorded owing to regulation on the dam. But would have reached 94.00 metres on the downstream gauge if no regulation had taken place.

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